



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/658,355	09/08/2003	Rene Gantier	17109-013001 (37851-923)	3519
20985	7590	08/18/2005	EXAMINER	
FISH & RICHARDSON, PC 12390 EL CAMINO REAL SAN DIEGO, CA 92130-2081			NEGIN, RUSSELL SCOTT	
			ART UNIT	PAPER NUMBER
			1631	

DATE MAILED: 08/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

10/658,355

**Applicant(s)**

GANTIER ET AL.

**Examiner**

Russell S. Negin

**Art Unit**

1631

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 1 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
  - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
  - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
  - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-80 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) \_\_\_\_ is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☒ Claim(s) 1-80 are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_.
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_.

## **DETAILED ACTION**

### ***Election/Restrictions***

Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 1-67, 79, and 80, drawn to a method for computationally generating or protein or peptide molecule, classified in class 702, subclass 19. If this group is elected, than the below summarized specie election is also required.
- II. Claims 68-74, drawn to a method of displaying the amino acid sequence of a protein and the resulting actual two-dimensional matrix representation characterizing the protein, classified in class 702, subclass 19.
- III. Claims 75-78, drawn to a method for making proteins with “substantially the same activity” or pseudo wild-type proteins, classified in class 702, subclass 19. If this group is elected, than the below summarized specie election is also required.

The inventions are distinct, each from the other because of the following reasons:

Inventions I and II and I and III are unrelated. Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different modes of operation, different functions, or different effects (MPEP § 806.04, MPEP § 808.01). In the instant case the different inventions have different functions. Invention I is a method of generating protein molecules and serves a different function as the method of displaying an amino acid sequence of the protein as described in Invention II.

Art Unit: 1631

Both Inventions are independent (to display a sequence of the protein, it is not necessary to generate it). Also, Inventions I and II are unrelated as a method of generating protein sequence and a two-dimensional matrix accounting for protein properties are independent. Inventions I and III are unrelated for while Invention I is a method of generating a "LEADS" protein in general, Invention III is a method of generating a "substantially modified" or "pseudo-wild type" protein which, unlike the protein of Invention I, does not have substantially altered stability or activity.

Inventions II and III are unrelated. Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different modes of operation, different functions, or different effects (MPEP § 806.04, MPEP § 808.01). In the instant case the different inventions have different functions. While Invention II describes process or making a matrix and the matrix itself, Invention III is a method of generating a "substantially modified" or "pseudo-wild type" protein. Both Inventions are unrelated.

All three inventions are unrelated and would provide undue burden if investigated together.

### ***Species Election for Group I***

This application contains claims directed to the following patentably distinct species of the claimed invention:

Specie I-A: mutant protein with a single mutation (i.e. a LEAD protein of Claim 1)

Specie I-B: mutant protein with multiple mutations (i.e. a Super-LEAD protein of Claim 6) If applicant chooses this option, he must also quantify the number of mutations by choosing between the integers in Claims 11 and 35. In addition, the applicant must choose between the methods listed in Claims 7 and 34 for production of nucleic acid molecules.

*WHETHER THE APPLICANT CHOOSE A OR B, HE MUST ALSO DECIDE BETWEEN WHETHER PROTEIN ACTIVITY OR STABILITY IS MODIFIED AND EVALUATED. (SEE BELOW)*

Applicant is required under 35 U.S.C. 121 to elect a single disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable. Currently, 1-5, 8-10, 28-35, and 79-80 are generic to the above species. These species are distinct due to the different methods used to arrive at each type of mutant protein. While a LEAD protein is a more simple procedure relying on a single mutation, a super-LEAD protein is a more complex procedure relying on multiple mutations.

Applicant also proposes Claims 12-15, 26-27, 46-50, and 63-67 dealing with changes in *activity* of the mutant protein relative to the wild type. If applicant elects activity, he must be specific in quantifying the desired change in activity from the wild type as opposed to listing them in Claims 13, 14, 48, 49, 50, 65, 66, and 67. Applicant also proposes Claims 15-25, 36-45, and 53-62 dealing with changes in *stability* of the mutant protein with respect to the wild type. If applicant elects this set of claims, he must be specific in defining what type of stability in Claims 15-25, 36-45, and 53-62 is

investigated (i.e. thermostability of Claim 15 as opposed to resistance to proteolysis of Claim 17). Activity and stability are two very different concepts in protein engineering, and applicant must elect one set of the above claims. Both activity and stability are different properties of enzymes and proteins that do not have to be correlated. A germane example in the literature is that of Kim and Moon who compare extracellular and intracellular inulase and find that stability and affinity (a type of activity) change in opposite directions energetically upon incorporation into a cell [title and abstract included from Korean article; Agricultural Chemistry and Biotechnology. Vol 30, 169-178, 1997]. Searching both activity and stability of mutant proteins is undue burden.

### ***Species Election for Group III***

This application contains claims directed to the following patentably distinct species of the claimed invention:

Specie III-A: Mutant protein has the same activity as the wild type (Claim 76).

Specie III-B: Mutant protein has a lower activity than the wild type (Claim 77).

Applicant is required under 35 U.S.C. 121 to elect a single disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable. Currently, Claim 75 is generic to the above species. Claims 76 and 77 each result in a different type of activity adjustment to the protein as a result of mutation, and thus applicant must elect between them. In Claim 78, applicant must be specific as to which percentage of the protein is replaced to result in the mutant.

Applicant is advised that a reply to this requirement must include an identification of the species that is elected consonant with this requirement, and a listing of all claims readable thereon, including any claims subsequently added. An argument that a claim is allowable or that all claims are generic is considered nonresponsive unless accompanied by an election.

Upon the allowance of a generic claim, applicant will be entitled to consideration of claims to additional species which are written in dependent form or otherwise include all the limitations of an allowed generic claim as provided by 37 CFR 1.141. If claims are added after the election, applicant must indicate which are readable upon the elected species. MPEP § 809.02(a).

Should applicant traverse on the ground that the species are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the species to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art because of their recognized divergent subject matter, restriction for examination purposes as indicated is proper.

Art Unit: 1631

Applicant is advised that the reply to this requirement to be complete must include an election of the invention to be examined even though the requirement be traversed (37 CFR 1.143).

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Papers related to this application may be submitted to Technical Center 1600 by facsimile transmission. Papers should be faxed to Technical Center 1600 via the central PTO Fax Center. The faxing of such pages must conform with the notices published in the Official Gazette, 1096 OG 30 (November 15, 1988), 1156 OG 61 (November 16, 1993), and 1157 OG 94 (December 28, 1993)(See 37 CFR § 1.6(d)). The Central PTO Fax Center Number is (571) 273-8300.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Russell Negin, Ph.D., whose telephone number is (571) 272-1083. The examiner can normally be reached on Monday-Friday from 7am to 4pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's Supervisor, Ardin Marschel, Ph.D., Supervisory Patent Examiner, can be reached at (571) 272-0718.

Any inquiry of a general nature or relating to the status of this application should be directed to Legal Instrument Examiner, Tina Plunkett, whose telephone number is (571) 272-0549.

Information regarding the status of the application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information on the PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

R. Negin  
8/8/05

  
ARDIN H. MARSCHEL  
SUPERVISORY PATENT EXAMINER